HLW & FD

EIS PROJECT - (AR)PF
Control # DC-61

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Aiken, South Carolina

T.L. Wichmann, Document Manager
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Idaho Operations Office
850 Energy Drive, MS 1108
Idaho Falls, ID 83401-1563
Attention: Idaho HLW&FD EIS

Subject: Comments on DOE/EIS-0287D

61-1 IX.A(2) I read with great interest the Idaho High-Level Waste and Facilities Disposition Draft Environmental Impact Statement (DOE/EIS-0287D). The document is very readable, well laid out and its production values are far above any other EIS (DOE or otherwise) that I have seen. The graphics displaying the alternatives are particularly useful.

While I applaud the style of the document, I was somewhat distressed about its content. I was particularly concerned with inconsistencies and inappropriate use of risk factors with regards to the hazards of radiation.

61-2 VIII.G(3) Rather than centralize discussions regarding what radiation is, how the human health effects are calculated, and what they mean, this key information has been inconsistently repeated at various places throughout the document. References are made to risk factors from two different organizations, one of which has no validity by itself in this country.

61-3 VIII.A(11) The limitations on those risk factors have been ignored and risk factors have been applied to values for which they are invalid and yield ridiculous results.

61-4 VIII.A(6) While the main purpose of the document is to compare alternative actions, the inclusion of incorrect and inappropriate information raises credibility issues with other analyses in the document that have been performed properly. The document also is an official publication of the Government of the United States and lends a certain cachet of approval to the invalid methods used in its preparation.

61-5 VIII.A(6) I therefore offer the following comments and recommendations for the improvement of the document:

61-6 VIII.A(11) **Comment 1:** Risk factors for radiation are referenced as coming from both the International Commission on Radiological Protection (ICRP) and the National Council on Radiation Protection and Measurements (NCRP). While the numerical values are identical, the source of the reference is important. ICRP recommendations are multi-national and are supposed to be reviewed by national radiation protection organizations for adoption or revision by individual countries. This function is performed in the United States by the NCRP, which does not always adopt ICRP recommendations in full. Therefore, it is inappropriate to reference ICRP risk factors for radiation.

Recommendation 1: References within the document to ICRP risk factors for radiation should be changed to NCRP.

Comment 2: The Discussion of the Health Effects of Ionizing Radiation on pages 5-54 and 5-55 contains over-simplified , inaccurate, and incomplete information.

61-7 VIII.A(11) The text box includes a lengthy discussion about the calculation of collective dose and how extremely small doses to large numbers of people are equivalent to larger doses to smaller groups of people. This particular topic is the subject of much discussion within the radiation protection field and the source of some controversy. The NRCP even acknowledges this in publication 116, Section 2.2, stating that currently available observations in population samples do not exclude zero effects at very low doses. Yet, this discussion, as well as that in the Executive Summary make no mention of the uncertainties involved in the use of the risk factors.

61-8 VIII.A(11) The text box incorrectly states that the risk factors it uses are for doses of less than 20 rem. The key factor is not the dose, but the *dose rate*. The NCRP recommendations regarding the risk factors are for dose rates of less than 10 rem/hour. Most accident analyses are for a default time of 2 hours, hence the 20 rem short-term dose. However, this is an example of oversimplification to the point that the meaning is compromised.

61-9 VIII.A(11) There is much talk in this section regarding the calculation of small numbers of Latent Cancer Fatalities (LCF), yet very little information is provided to provide the public a useful reference. The document does mention that an average member of the public will receive 360 mrem/year of radiation exposure, yet no mention is made of the number of normal cancers in the local population. As much is made of the connection of the small radiation exposure values calculated in the report to latent cancer fatalities, the background value of "natural" cancer should be listed to provide a basis from which to evaluate the proposed consequences.

Recommendation 2: The Discussion of the Health Effects of Ionizing Radiation should be revised to add information regarding the limitations and uncertainties of the radiation risk factors, to correct the dose rate limitation, and to include baseline cancer risk data. In addition, in other portions of the document where descriptions of this type are duplicated, a reference should be added back to this section.

61-10 VIII.G(3)

61-11 VIII.A(11)

Comment 3: Throughout the document, radiation risk factors for calculating LCF are used inappropriately in calculating LCF probabilities to individuals.

61-12
VIII.A(11)

While this EIS was clearly prepared using the DOE Recommendations for the preparation of Environmental Impact Statements, those recommendations regarding human health effects contain inconsistent and scientifically inaccurate guidance. NCRP risk factors for radiation are for *populations*, not individuals and only apply at radiation levels expected in routine operations. It is clear from the NCRP reports that the risk factors are only valid for the range of radiation exposures where stocastic risks (cancer) dominate. It is clearly inappropriate to calculate the number of fatal cancers that may develop when the population is exposed to radiation levels that will induce deterministic effects (non-cancerous direct effects). While the DOE recommendations call for the presentation of probabilities of cancer-induction, the NCRP risk factors are only for populations.

As an example of this lunacy of blindly calculating individual LCF probabilities; Table 5.2-38, analysis BDB08, exposes a non-involved worker to 4600 rem of dose and calculates that their probability of a fatal cancer is greater than 100% (Specifically, 1.8). This at a dose level that would kill the worker from acute radiation effects long before they could live long enough to develop cancer. They should be so lucky as to live long enough to die from cancer.

The effects of radiation on the human body and estimating the risk of radiation is complex and requires numerous assumptions. There are also limits that must be placed on the validity of the analysis for it to remain scientifically accurate. Calculation of LCFs for doses well above routine radiation protection levels is clearly an example of the use of scientific values outside their valid range.

Recommendation 3: The calculated probabilities of Latent Cancer Fatalities to individuals (Maximally Exposed Individual and Noninvolved worker) presented in the document should be removed in full.

61-13
VIII.G(5)

Comment 4: The Facility Accident Appendix introduces the concept of Integrated Involved Worker Risk, combining the risk from non-radiological occupational accidents, the risk associated with occupational radiation exposure, and the normalized risk from accidental exposure to much higher levels of radiation. This combination of three extremely different types of risk is both novel and inappropriate.

Industrial fatalities are easy to understand. There is an accident and someone dies. Generally, something large and heavy falls on them or they fall and they die. There are many variations of industrial fatalities, but they all have one thing in common; they are immediate and final. You don't wait 20 years and then maybe develop a fatal disease; you just die.

Occupational radiation exposures are chronic in nature and the uncertainty associated with the risk is high. Occupational dose limits are set to keep the risk of developing a fatal cancer low, but high occupational doses within established occupational limits will not guarantee a fatal cancer.

Accident radiation doses to involved workers will vary in effect, but share more in common with industrial fatalities than with long-term occupational exposures. At the upper end of the possible radiation doses, the worker dies. At lesser but still high doses, the worker may be seriously ill for a long period of time. At accident doses in the range of occupational exposures, there will be no discernable effect on the worker and they may or may not contract a fatal cancer later in life. In its use of accident consequences for the Integrated Involved Worker Dose, the accident consequences are normalized by the probability of the accident. While this method is useful for comparing between alternatives and to ensure that contributors to risk have been identified, its use in combination with industrial fatality rates and occupational radiation exposure risks is inappropriate.

Combining three different risk types of three different mechanisms is much like combining apples, oranges, and filberts. You can do the math, but it really doesn't mean anything. The calculation and use of the Integrated Involved Worker Risk is technically invalid, misleading, and detracts from useful discussions regarding the relative risk of alternatives.

Recommendation 4: The discussion and calculation of Integrated Involved Worker Risk should be removed from the document in total.

Comment 5: The Executive Summary contains much material that is not presented in the main document.

61-14
IX.A(1)

A summary is supposed to summarize information from the report it is based upon. However, for this document, the Executive Summary appears to be a convenient place to put all sorts of new information. Normally, a member of the public having a question raised from material in the Executive Summary would refer to the appropriate section of the main report or a supporting appendix to find a more detailed description. However, that is not possible in this document as many of the figures and their supporting information on results are only presented in the summary and not in the main report.

The Executive Summary also suffers from the same problems listed above in Comments 1-4. Due to the size of this particular document, the Executive Summary may be the only thing that people actually read, making it even more important for the summary to accurately reflect the analysis of the main report. This includes the listing of the limitations and uncertainties of the analysis, more so than the extremely brief discussion in Section 4 of the summary.

Recommendation 5: The Executive Summary should be rewritten to actually summarize the report it is based upon.

This is a fine document in terms of readability and presentation. I am sure it will set a new standard for DOE Environmental Impact Statements once its technical flaws are corrected.

Sincerely,

Jim Willison, Certified Health Physicist

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ATTN: Idaho HLW & FD EIS

Dear Mr. Wichmann:

02-1
VII.E(2)

The Shoshone-Bannock Tribes have reviewed the draft EIS for High-Level Waste and Facilities Disposition dated December 1999. We have some technical questions and comments on this matter which are attached to this letter. We would like to have these questions and comments addressed at a meeting with the Fort Hall Business Council as the governing body of the Shoshone-Bannock Tribes and appropriate staff at a time to be set. In addition to the technical comments and questions we do have policy related comments and concerns as well. I will address these concerns in this letter.

The members of the Shoshone-Bannock Tribes (Tribes) had made their permanent home on the Fort Hall Indian Reservation located in southeastern Idaho pursuant to the 1868 Fort Bridger Treaty 15 Stat. 673. The membership of the Tribes includes almost 4000 members, many of whom live on the Fort Hall Indian Reservation and in the surrounding communities. There are two major interstates (I-15 and I-86) that go through the Fort Hall Indian Reservation. In addition, the Blackfoot River and Snake River make up the borders of the Fort Hall Indian Reservation. In addition certain Bands of the Shoshone and Bannock people have lived in this area since time immemorial. The INEEL site is included in the traditional and aboriginal areas frequented by the Shoshone and Bannock people. The Fort Bridger Treaty in Article 4 contemplates that tribal members will be allowed to continue their hunting, fishing and gathering activities off of the Reservation, including that area in and around the INEEL. Because of the location of INEEL less than fifty miles from the Fort Hall Indian Reservation, the Shoshone-Bannock Tribes are greatly concerned about the activities which occur on that site including the issues involving the high level waste and disposition of such waste which is the subject of the EIS. The Tribes are concerned that the air, land and water may be affected by the activities

02-2
VII.E(3)